Catalogue no. 62F0026M, no. 1
ISSN 1708-8879
ISBN 978-1-100-25563-7

Research paper

Household Expenditures Research Paper Series

User Guide for the Survey of Household Spending, 2013

Income Statistics Division

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Statistics Canada
Income Statistics Division

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Published by authority of the Minister responsible for Statistics Canada

January 2015

Catalogue no. 62F0026M, no. 1

ISSN 1708-8879
ISBN 978-1-100-25563-7

Frequency: Occasional

Ottawa

Cette publication est également disponible en français.

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User information

Symbols

The following standard symbols are used in Statistics Canada publications:

.	not available for any reference period
..	not available for a specific reference period
...	not applicable
0	true zero or a value rounded to zero
0s	value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded
p	preliminary
r	revised
x	suppressed to meet the confidentiality requirements of the *Statistics Act*
E	use with caution
F	too unreliable to be published
*	significantly different from reference category ($p < 0.05$)

Table of contents

User Guide for the Survey of Household Spending, 2013

1 Introduction

This guide presents information of interest to users of data from the 2013 Survey of Household Spending (SHS). It includes descriptions of the survey methodology and data quality, and definitions of survey terms and variables. There is also a section describing various statistics that can be drawn from the survey data. The SHS is conducted annually.

The SHS combines a questionnaire with recall periods based on the type of expenditure (1, 3 or 12 months, last payment, four weeks) and a daily expenditure diary that selected households complete for two weeks following the interview. As well, data collection is continuous throughout the year. Starting in 2012, the sample size for the expenditure diary was 50% of the total sample.

The 2013 SHS was conducted from January 2013 to December 2013 using a sample of 17,389 households in the 10 provinces. Detailed spending information was collected, as well as limited information on dwelling characteristics and household equipment.

Household expenditure estimates are available for the national and provincial levels and by household tenure, age of reference person, size of area of residence, type of household and household income quintile. Detailed estimates on food expenditures are also available.

For custom tabulations or more information on the SHS, please contact Client Services (613-951-7355, 1-888-297-7355 or *income@statcan.gc.ca*), Income Statistics Division.

2 Survey methodology

2.1 The target population

The target population of the 2013 SHS is the population of Canada's 10 provinces, excluding residents of institutions, members of the Canadian Forces living in military camps and people living on Indian reserves. In all, these exclusions make up about 2% of the population of the 10 provinces.

For operational reasons, people living in some remote areas where the rate of vacant dwellings is very high and where the collection cost would be exorbitant are excluded from collection. Also excluded, in addition to people living in institutions, are people living in other types of collective dwellings:

- people living in residences for dependent seniors; and
- people living permanently in school residences, work camps, etc.; and
- members of religious and other communal colonies.

Collection exclusions make up less than 0.5% of the target population. However, these people are included in the population estimates to which the SHS estimates are adjusted (see section 2.6).

2.2 The survey content and reference periods

The SHS primarily collects detailed information on household expenditures. It also collects information about demographic characteristics of the household, certain dwelling characteristics (e.g., type, age and tenure) and certain information on household equipment (e.g., electronics and communications equipment). Income information from personal income tax data is also combined with the survey data.

For expenditure information collected with the questionnaire, the length of the reference period depends on the question (e.g., the past month, the past three months, or the past 12 months). The period covered also varies with the collection month (e.g., for households in the January 2013 sample, "the past 12 months" means the period from January 2012 to December 2012, while for households in the December 2013 sample, it refers to the months between December 2012 and November 2013). Expenditures collected in the daily expenditure diary are reported for a period of two weeks.

In general, longer reference periods are used for goods and services that are more expensive or purchased infrequently or irregularly. On the contrary, shorter reference periods are used for goods and services that are of less value or purchased frequently or at regular intervals.

For demographic characteristics, dwelling characteristics and household equipment, the reference period is the interview date. For income, the reference period is the calendar year preceding the survey year (i.e. 2012 for SHS 2013).

2.3 The sample design

The sample of the 2013 Survey of Household Spending consists of 17,389 households spread over the 10 provinces. A stratified, multi-stage sampling plan was used to select the sample. It is generally a two-stage plan, the first stage being a sample of geographic areas (referred to as clusters). Then a list of all the dwellings in the selected clusters is prepared, and a sample of dwellings is selected. The selected dwellings that are inhabited by members of the target population constitute the survey's sample of households. The SHS uses a number of components of the Labour Force Survey's (LFS) sample design to minimize operating costs, though the dwellings selected are different.

Fifty percent of sampled households are selected to receive an expenditure diary. Thus, in each selected cluster, a subsample of the previously chosen dwellings is selected in order to identify the dwellings for which the households will be asked to fill out a diary.

The national sample is first divided among the provinces on the basis of the variability of total household expenditures and, to a lesser extent, the number of households in each province. The goal is to obtain estimates of similar quality at the provincial level. The sample sizes for the provinces are shown in Table 1 in Section 3. The sample is then divided among the strata defined by grouping clusters with similar characteristics based on a number of socio-demographic variables. Some strata were defined to target specific subpopulations, such as the high-income household strata. To improve the quality of the estimates, the high-income household strata are allocated a larger share of the sample than the other strata, where an allocation proportional to stratum size is used.

Since data are collected monthly, the sample is divided into 12 subsamples of similar size. During that process, the SHS sample is coordinated with the samples of the LFS and, to a lesser extent, the Canadian Community Health Survey (CCHS), which use the same sampling frame and conduct personal interviews for part of their sample. Coordination means that, wherever possible, if a cluster is selected for more than one survey, collection for the surveys will take place in the same month. This will enable the interviewer to become familiar with the neighbourhood, collect the data and carry out the necessary follow-up for more than one survey at a time.

2.4 Data collection

The SHS is a voluntary survey. For the most part, the data are obtained directly from the respondent by combining two collection modes: a personal interview conducted by an interviewer using a questionnaire on a laptop, and a diary in which the household is required to report its daily expenditures over a two-week period. The data were collected on a continuous basis from January to December 2013 from a sample of households spread over 12 monthly collection cycles.

First, households in the sample are asked to complete a questionnaire that, for the most part, collects regular expenditures (such as rent and electricity) and less frequent expenditures (such as furniture and dwelling repairs) for a reference period that varies in length depending on the type of expenditure. For regular expenditures, the last-payment method is usually used. It involves collecting the amount of the last payment and the period it covered. For the other types of expenditures collected in the interview, reference periods of one month, three months or twelve months are generally used. The periods are defined in terms of months preceding the month of the interview. For example, for a household in the June sample, "the past three months" means the period from March 1 to May 31, 2013. The demographic characteristics, dwelling characteristics and household equipment, which are also collected in the interview, relate to the household's situation at the time of the interview. Starting in 2013, respondents are informed that the survey data will be combined with tax data to obtain some variables related to personal income. Personal income tax data from household members aged 16 and over correspond to the calendar year prior to the survey year.

Fifty percent of sampled households are selected to also complete an expenditure diary. Following the interview, respondents of this subsample are asked to record the expenditures of all household members in a daily expenditure diary for a period of two weeks starting the day after the interview. Households are required to include all their spending, except a few types of expenditures, such as rent, regular utilities payments and real estate and vehicle purchases. Households have the option of providing receipts to reduce the amount of information recorded in the diary. However, they are asked to write out additional information on the receipt if the description is incomplete.

Telephone follow-up is carried out a few days after the interview to find out if the respondent has any questions about the diary and to reiterate important information about how to complete it. At the end of the two-week period, the interviewer returns to the respondent's residence to pick up the diary and ask a few additional questions to help the respondent report expenditures that he or she might have forgotten.

The diaries and all receipts supplied by respondents are scanned and captured at Statistics Canada's Head Office. An expenditure classification code is assigned to each item from a list of more than 650 different codes.

2.5 Data processing and quality control

The computerized questionnaire contains many features designed to maximize the quality of the data collected. Many edits are built into the questionnaire to compare the reported data with unusual values and detect logical inconsistencies. When an edit fails, the interviewer is prompted to correct the information (with the respondent's help, if necessary). Once the data are transmitted to Head Office, a comprehensive series of processing steps is undertaken for the purpose of detailed verification of each questionnaire. Invalid responses are corrected or flagged for imputation.

A number of edits are also carried out on the diary data when the diaries are received at Head Office and throughout the capture and coding steps. For example, checks are carried out to ensure that the start and end dates of the reference period of the diary are indicated, that the reported expenditures were made during the specified reference period, and that there are no items that appear in both the data recorded in the diary and the receipts provided by the respondent. After validation, capture and coding, quality control procedures are applied. A sample of diaries is selected and completely rechecked to ensure that the diaries were captured and coded as specified in the procedures.

Then a series of detailed edits are performed on all diaries. Invalid responses are corrected or flagged for imputation. The final step is to assess whether the information reported in the diaries is of sufficient quality using parameters which differ according to the household characteristics. The reported expenditures and number of items are compared with minimum thresholds estimated for each geographic area (Atlantic Provinces, Quebec, Ontario, Prairie Provinces and British Columbia), each household income class and each household size. Diaries that satisfy the conditions are deemed usable. The other diaries are examined. They will be deemed usable if there is a note explaining their low expenditures or their small number of reported items (for example a person living alone who had few expenses to report because he/she was on a business trip during the diary recording period). Diaries that do not meet the usability criteria are treated the same as non-response diaries; they are excluded from the estimates. It should be noted that some of the usable diaries are incomplete and could have non-responded days.

To solve problems of missing or invalid information in interview questions, donor imputation by the nearest neighbour method is generally used. Data from another respondent with similar characteristics (the donor) are used to impute. The imputation is done on one group of variables at a time, with the groups formed on the basis of the relationships among the variables. The characteristics used to identify the donor are selected such that they are correlated with the variables to be imputed. Household income, dwelling type and number of adults and children are commonly used characteristics. For operational reasons, the income information from personal income tax data is not available in time for imputation of the survey data. Consequently, the household income used for imputation is taken from an additional question on total household income that is asked during the interview exclusively for the purpose of data imputation.

Donor imputation is also used when information is missing from the daily expenditure diary. A respondent may have reported a particular expenditure item without its cost or given the total amount spent (on groceries, for example) without listing the individual items. Imputation is also used to enhance the level of detail in coding the items reported. For example, the information provided by the respondent may simply indicate that a bakery product was purchased, but a more detailed code is required to meet the survey's needs. In this case, donor imputation is used to impute the type of bakery product (bread, crackers, cookies, cakes and other pastries, etc.). Diary imputation is carried out at the reported item level, and the characteristics most often used to identify the donor are cost, available partial code, household income and household size. Imputation is done by province and quarter to control for provincial differences and seasonality of expenditures.

Starting in 2012, the imputation method was refined to use supplementary information on the type of store where the purchases were made to produce detailed expenditures when a respondent has only provided a total amount in their diary. This method takes into account the increasing amount of grocery products sold in large chain stores that do not specialize in groceries.

For personal income tax data, missing or invalid data are generally donor imputed.

Income and expenditure imputation is performed primarily with Statistics Canada's Canadian Census Edit and Imputation System (CANCEIS).

After imputation, taxes are added to those diary items that should be reported with taxes excluded. In order to reduce the response burden, instructions are provided to the respondents indicating when to include or exclude taxes from reported expenses. Thus, the Goods and Services Tax (GST) and the Provincial Sales Tax (PST), or the Harmonized Sales Tax (HST) are added to the diary items, according to the appropriate federal and provincial taxation rates.

2.6 Estimation

The estimation of population characteristics from a sample survey is based on the premise that each sampled household represents a certain number of other households in addition to itself. This number is referred to as the survey weight, and the weighting process involves computing the weight assigned to each household. There are a number of steps in that process.

First, each household is given an initial weight equal to the inverse of its selection probability. Since only 50% of the households need to complete a diary, different weights are computed for the interview questionnaire and the diary. A few adjustments are later applied to the interview weights and the diary weights.

The interview weights are first adjusted to take into account the households that did not answer the questionnaire. They are then adjusted so that selected survey estimates agree with aggregates or estimates from independent auxiliary sources.

The first source is the number of persons by age group and the number of households by household size from population estimates produced by the Demography Division using data from the 2006 Census. Annual estimates of the number of persons in eight age groups (0–6, 7–17, 18–24, 25–34, 35–44, 45–54, 55–64 and 65+) are used at the provincial level and two age groups (0–17 and 18+) at the census metropolitan area level. For the number of households, the weights are calibrated to the annual provincial estimates for three household size categories (one, two, and three or more persons). An adjustment is also done to ensure that each quarter is adequately represented in terms of the total number of households.

The second source is the Statement of Remuneration Paid (T4) data from the Canada Revenue Agency (CRA), which ensure that the survey's weighted distribution of income (on the basis of wages and salaries) agree with the income distribution of the Canadian population. Interview weights are therefore calibrated to the T4 accounts of the number of persons per province in six categories of wages and salaries on the basis of provincial percentiles (0th–25th, 25th–50th, 50th–65th, 65th–75th, 75th–95th and 95th–100th).

Starting with SHS 2012, a third source for totals is provided by the personal income tax data (T1) from the CRA. The interview weights are adjusted to reflect the number of persons in each of the three highest personal income classes (based on the 95.5th, 97th, and 98.5th percentiles) for each province, except Prince Edward Island where one income class is used. This adjustment aims to compensate for the under-representation of these groups among the survey respondents.

The diary weights are also subject to a series of adjustments. A factor adjusts for the nonresponse to the questionnaire. Another factor compensates for households that respond to the questionnaire but refuse to complete the diary. The weights are also adjusted to demographic estimates in a manner similar to that used for the interview weights. Indeed, the demographic estimates of the number of persons at the provincial level are the same. However, at the census metropolitan area level, the distinction between the two age groups (0 to 17 and 18 and over) is retained only for Montreal, Toronto and Vancouver and for SHS 2013, no adjustment was done for Calgary. As for the number of households, the weights are adjusted to annual provincial estimates for the three household size categories as done for the interview, but no quarterly adjustments are made.

The diary weights are also adjusted in function of the income. However, instead of adjusting on wages and salaries (T4), the weights are adjusted to the estimated number of households per income group by province calculated from the interview data. Specifically, the estimated number of households for each provincial quintile of total household income is used. The adjustment to the interview estimates ensures that the weighted income distribution of diary-respondent households is consistent with the weighted income distribution of interview-respondent households. The diary weights are also adjusted for the number of high income individuals according to personal income tax data, similarly to the interview, but a single income class based on the 95.5th percentile is used. This personal income diary adjustment is not applied to Prince Edward Island, however.

All expenditure variables in the interview and diary are annualized by multiplying them by a factor appropriate for the reference period. Some expenditure data are also corrected by an adjustment factor when influential values are identified. For the diary, another adjustment factor is produced to compensate for the non-responded days.

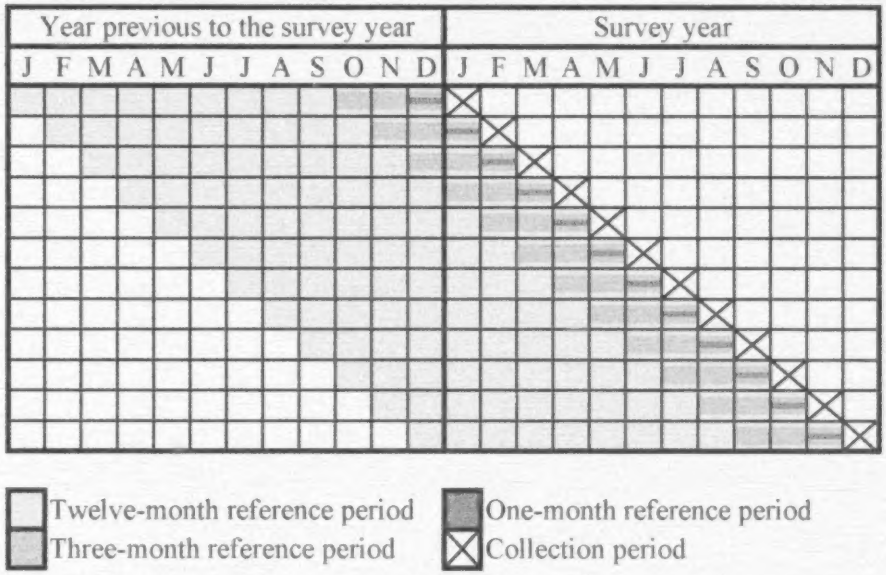
The estimates for a given expenditure category collected from the interview are therefore the weighted sums (using interview weights) of the annualized and adjusted amounts. The estimates of an expenditure category derived from diary data are calculated in a similar manner using diary weights and the appropriate annualisation and adjustment factors. Lastly, summary expenditure category estimates that include components from both collection methods are produced by taking the sum of the estimates of the diary and the interview components.

2.7 Reference period of the estimates

With continuous monthly collection, the reference period of the data differs from one month to the other, as illustrated in Figure 1. For example, for an expenditure item with a three-month reference period, the data from the July sample covers expenditures made between April 1 and June 30, whereas the data from the December sample covers expenditures made between September 1 and November 30.

Figure 1

Monthly sample reference periods of three different lengths



SHS estimates are produced by combining the data from the 12 monthly collection cycles and by annualizing the expenditures collected over various reference periods in order to standardize them. The period covered by the estimates is therefore a function of the length of reference period and of the collection months considered.

When combining the data of the 12 collection cycles to generate estimates for expenditure items with short reference periods (e.g., one month), the expenditures that are covered occur mostly in the survey year. That is also true for all expenditure data collected with the diary. As for expenditure items with a 12-month reference period, the data collected include expenses occurring between January of the year before the survey year and November of the survey year, depending on the collection month.

The hypothesis that the estimates produced from the SHS cover a single period when the data from 12 collection cycles has been combined assumes that expenditures made during the survey year and during the previous year are similar for items collected using a 12 month reference period. Thus, the validity of this hypothesis affects the interpretation of comparisons between expenditures collected over short periods and expenditures collected over a 12 month period.

The "limits" of the collection model in producing expenditure estimates covering the same period (or the same year) are known since the majority of countries use this methodology. Despite any limitations, continuous collection with reference periods adapted to the ability of the respondent to provide the information is considered preferable in order to obtain data that reflects households' true expenditures.

2.8 Historical revisions

The 2013 SHS estimates were computed with weights adjusted to 2013 population estimates. These population estimates were based on 2006 Census data and more recent information from administrative sources such as birth, death and migration registers.

SHS estimates prior to 2010 (2001-2009) are based on weights calibrated to population estimates produced using data from the 2001 Census. There is no plan to revise theses estimates (based on the 2006 Census data) due to the break in the data series starting with the 2010 SHS (see section 2.9).

2.9 Comparability over time

The SHS has been conducted each year since 1997. This survey includes most of the content of its predecessors, the periodic Family Expenditure Survey and the Household Facilities and Equipment Survey. Some changes to the methodology and definitions were made between 1997 and 2009, but the SHS was primarily based on an interview during the first quarter of the year in which households reported expenditures incurred in the preceding calendar year.

A new methodology which combines a questionnaire and a diary to collect the household expenditures was introduced for the 2010 survey. The reference periods have been reduced for many expenditure items and collection is continuous throughout the year. Although the expenditure data collected since 2010 are similar to those of previous years, the changes to data collection, processing and estimation methods have created a break in the data series. As a result, caution should be used in comparing SHS data since 2010 with previous years, unless otherwise noted.

Since 2010, the SHS incorporates a significant amount of content from the Food Expenditure Survey (FES), last conducted in 2001. Although there are some differences between the SHS and FES methodologies, food expenditure data in both surveys have been collected using a daily expenditure diary that households are asked to fill in for a period of two weeks. The content of the SHS diary is slightly less detailed than that of the FES diary (e.g., the weight and quantity of foods are not collected) to limit the SHS respondent's burden.

The content of the SHS has also been reviewed in 2010 to reduce the time required for the interview. A number of components regarding household equipment and dwelling characteristics and most of the questions regarding changes in household assets and liabilities have been dropped. Some definitions have also been changed. As well, starting with the 2010 survey, the data related to household income and income tax come mainly from personal income tax data.

Finally, the estimates from 2010 to 2013 are based on weights calibrated to population estimates produced using data from the 2006 Census. Estimates in previous years (2001-2009) are based on weights calibrated to population estimates produced using data from the 2001 Census.

3 Data quality

Like all surveys, the SHS is subject to error, despite all the precautions taken in each step of the survey to prevent them or reduce their impact. There are two types of error: sampling and non-sampling.

3.1 Sampling errors

Sampling errors occur because inferences about the entire population are based on information obtained from only a sample of the population. The sample design, estimation method, sample size and data variability determine the size of the sampling error. The data variability for an expenditure item is the difference between members of the population in spending on that item. In general, the greater the differences between households, the larger the sampling error will be.

A common measure of sampling error is the standard error (SE). The SE is the degree of variation in the estimates as a result of selecting one particular sample over another. The SE expressed as a percentage of the estimate is called the coefficient of variation (CV). The CV is used to indicate the degree of uncertainty associated with an estimate. For example, if the estimated number of households having a given dwelling characteristic is 10,000 with a CV of 5%, then the actual number is between 9 500 and 10,500 households 68% of the time, and between 9,000 and 11,000 households 95% of the time.

The standard errors for the SHS are estimated using the bootstrap method (see reference [1] in section 7). CVs are available for the national and provincial estimates as well as for the estimates by household type, age of reference person, household income quintile, household tenure and size of area of residence.

3.2 Data suppression

To ensure accuracy, the estimates for which the CVs have been estimated at more than 33% have been suppressed. However, from an operational standpoint, when tables are created, the suppression rule is based on the number of households that declare an expense for an item. Indeed, there is a relationship between the CV and the number of reporting households, and analyses carried out on a very large number of SHS estimates show that a threshold of 30 reporting households generally allows for a CV of at most 33% for the expenditure estimates.

However, data for suppressed items do contribute to summary level variables. For example, the expenditure estimate for a particular item of clothing might be suppressed but this amount is included in the total estimate for clothing expenditure.

3.3 Non-sampling errors

Non-sampling errors occur because certain factors make it difficult to obtain accurate responses or responses that retain their accuracy throughout processing. Unlike sampling errors, non-sampling errors are not readily quantified. Four sources of non-sampling error can be identified: coverage error, response error, non-response error and processing error.

3.3.1 Coverage error

Coverage error arises when sampling frame units do not adequately represent the target population. This error may occur during sample design or selection, or during data collection or processing.

3.3.2 Response error

Response error occurs when respondents provide inaccurate information. This error may be due to many factors, including faulty design of the questionnaire, misinterpretation of questions by interviewers or respondents, or faulty reporting by respondents.

In general, the accuracy of SHS data depends largely on respondents' ability to remember (recall) household expenditures and their willingness to consult records. Response error is the most difficult aspect of data quality to measure.

3.3.3 Non-response error

Errors due to non-response occur when potential respondents do not provide the required information or the information they provide is unusable. The main impact of non-response on data quality is that it can cause a bias in the estimates if the characteristics of respondents and non-respondents differ and the difference has an impact on the expenditures studied. While non-response rates can be calculated, they provide only an indication of data quality, since they do not measure the bias associated with the estimates. The magnitude of non-response can be considered a simple indicator of the risks of bias in the estimates.

For the 2013 SHS, the interview response rate is 67.2%, and provincial response rates are shown in Table 1. The table also shows the number of non-responding households by reason for non-response. Reasons include the inability to contact the household, the household's refusal to participate in the survey and the inability to hold an interview because of special circumstances (e.g., the respondent speaks neither official language or has a physical condition that precludes an interview).

Text table 1
Interview response rates, Canada and provinces, 2013

	Eligible sampled households	No contacts	Refusals	Residual non-respondents	Respondents	Response rate [1]
	number					percentage
Canada	17,389	1,158	3,911	634	11,686	67.2
Atlantic provinces	5,420	295	1,239	236	3,650	67.3
Newfoundland and Labrador	1,417	94	352	43	928	65.5
Prince Edward Island	790	28	173	36	553	70.0
Nova Scotia	1,679	73	405	88	1,113	66.3
New Brunswick	1,534	100	309	69	1,056	68.8
Quebec	2,374	102	550	73	1,649	69.5
Ontario	2,567	195	612	124	1,636	63.7
Prairie provinces	5,013	413	1,049	141	3,410	68.0
Manitoba	1,725	135	354	56	1,180	68.4
Saskatchewan	1,447	131	300	46	970	67.0
Alberta	1,841	147	395	39	1,260	68.4
British Columbia	2,015	153	461	60	1,341	66.6

1. (Respondent households/Eligible sampled households) x 100.

Some of the households selected to fill out a diary did not complete it or provided a diary that was considered unusable under the criteria set out in section 2.5. For the 2013 SHS, the diary response rate among the households selected to fill out a diary having completed the interview is 68.9%, and provincial rates are given in Appendix I. The final diary response rate is 46.1% nationally, and provincial rates are shown in Table 2.

Text table 2
Diary response rates, Canada and provinces, 2013

	Eligible sampled households [1]	Interview non-respondents [2]	Diaries [3]			Response rate [4]
			Refusal	Unusable	Usable	
	number					percentage
Canada	8,782	2,904	1,690	140	4,048	46.1
Atlantic provinces	2,742	909	467	51	1,315	48.0
Newfoundland and Labrador	718	250	121	10	337	46.9
Prince Edward Island	398	126	73	10	189	47.5
Nova Scotia	849	287	154	18	390	45.9
New Brunswick	777	246	119	13	399	51.4
Quebec	1,205	376	218	18	593	49.2
Ontario	1,300	470	284	15	531	40.8
Prairie provinces	2,513	826	495	36	1,156	46.0
Manitoba	862	284	155	10	413	47.9
Saskatchewan	723	237	141	13	332	45.9
Alberta	928	305	199	13	411	44.3
British Columbia	1,022	323	226	20	453	44.3

1. The eligible sampled households are those selected to fill out the diary.
2. Includes interview "No contacts", "Refusals" and "Residual non-respondents" from households selected to fill out the diary.
3. The definition of usable and unusable diaries is given in the "Data processing and quality control" Section.
4. (Usable diaries/Eligible sampled households) x 100.

The response rate varies from month to month. Monthly response rates for the interview and diary can be found in Appendix II. Interview and diary response rates by size of area of residence and dwelling type can be found in Appendix III.

The diary response rate of interview respondents can be found in Appendix IV, broken down by various households' characteristics, including household type, household tenure, age of the reference person and before-tax income quintile.

Cases in which the respondent fails to answer some of the questions are referred to as partial non-response. Imputing missing values compensates for this partial non-response. Imputation rates are described in section 3.3.5.

There are also cases in which a household fails to complete the diary for all 14 days as required, leaving days with no data. Adjustment factors were thus calculated to take into consideration these days with no data.

3.3.4 Processing error

Processing errors may occur in any of the data processing stages, including data entry, coding, editing, imputation of partial non-response, weighting and tabulation. Steps taken to reduce processing error are described in section 2.5.

3.3.5 Imputation of partial non-response

The residual bias remaining after the imputation of partial non-response is difficult to measure. It depends on the imputation method's ability to produce unbiased estimates. The imputation rates provide an indication of the magnitude of partial non-response.

Partial interview non-response may result from a lack of information or an invalid response to a question. The national and provincial percentages of households for which certain categories of expenditures had to be imputed because of partial interview non-response is shown in Table 3, by number of imputed expenditure variables per household (out of all consumer expenditure data collected during the interview). The table contains two series of results, including and excluding expenditures on communication services (telephone, cell phone and Internet), and cablevision, satellite distribution and security system services. This distinction has been made because those services are increasingly being purchased as a package. Households are often billed for bundled services, making it difficult or impossible to provide separate expenditure data for each service. Therefore, the total amount paid for the package is allocated to individual services through imputation, which significantly increases the number of households for which expenditures must be imputed.

Text table 3
Percentage of households requiring imputation for consumer expenses collected during the interview, Canada and provinces, 2013

	Number of variables imputed [1] (out of 179)				Number of variables imputed [2] (out of 185)			
	1	2 to 9	10 or more	Total	1	2 to 9	10 or more	Total
	percentage							
Canada	19.4	36.9	2.6	58.8	9.8	64.7	4.8	79.3
Newfoundland and Labrador	19.5	32.1	1.3	52.9	7.3	69.6	3.6	80.5
Prince Edward Island	22.4	31.5	2.0	55.9	9.8	70.2	4.3	84.3
Nova Scotia	19.9	34.9	1.7	56.5	8.1	71.4	4.0	83.5
New Brunswick	20.4	25.1	1.4	46.9	9.4	61.2	3.1	73.7
Quebec	24.1	32.1	2.1	58.3	10.4	67.0	4.2	81.6
Ontario	21.9	34.2	1.4	57.5	14.1	57.0	3.2	74.3
Manitoba	15.5	42.1	6.0	63.6	10.8	58.9	8.6	78.3
Saskatchewan	17.8	36.6	3.0	57.4	8.0	62.9	5.1	76.0
Alberta	16.9	41.5	3.2	61.6	10.3	61.1	5.4	76.8
British Columbia	14.9	53.8	3.4	72.1	6.7	73.0	6.7	86.4

1. Excluding expenditures related to communication services, and services for cablevision, satellite distribution and security systems.
2. Including expenditures related to communication services, and services for cablevision, satellite distribution and security systems.

Users of expenditure estimates relating to communication services, and cablevision, satellite television and security system services should therefore take into account the high level of imputation of the expenditure data if they are examining individual services rather than the combined totals. A measure of the impact of imputation on each individual service has been produced and is discussed in Appendix V. This measure represents the proportion of the total value of the estimate obtained from imputed data.

The percentages of households that responded to the interview and for which dwelling characteristics or household equipment had to be imputed can be found in Appendix VI.

The imputation rates for all expenditures reported in the expenditure diary are shown in tables 4 and 5. Table 4 deals with expenditures reported in the first section of the diary, on goods and services including food from stores. Table 5 shows the imputation rates for the second section of the diary, on expenses from restaurants.

For expenditure data from the diaries, imputation is used primarily to assign a value when the amount of a reported expenditure is missing, to assign a list of expenditure items (with individual costs) when only the total cost was provided (e.g., to assign grocery items and their individual cost when the respondent has provided only the total amount of the bill) or to assign an expenditure code that is more detailed than the one that could be assigned using the information from the respondent (e.g., the type of bakery product). The imputation rate for each of these three types of imputation is shown in Table 4. Each rate represents the proportion of imputed items out of all the expenditure items from the diaries.

Text table 4
Imputation rates by type of imputation for the section of the diary on Goods and services including food from stores, Canada, 2013

Type of imputation	Imputation rate
	percentage
Imputation of a missing cost for a reported expense	
Food from stores	1.2
Other goods and services	2.2
All expenditures	1.5
Imputation of expenditure items (and their individual cost) from a total expense	
Food from stores	19.7
Other goods and services	12.0
All expenditures	17.1
Imputation of detailed expenditure code	
Food from stores	5.7
Other goods and services	5.8
All expenditures	5.7

The risks of bias associated with the imputed data depend largely on the level of detail at which the SHS data are used. For example, food expenditure data in the SHS are produced at a high level of detail to meet the needs of the Food Expenditure Survey users (last conducted in 2001). Food expenditures are categorized using a hierarchical system of more than 200 expenditure codes. For some reported expenditure items, the food product may have been known (e.g., dairy products or even milk), but the level of detail required (e.g., skim milk, 1% milk or 2% milk) had to be imputed. This type of imputation gives rise to a risk of bias only in expenditure estimates at a very detailed level. In other cases, however, almost no information on the type of expenditure was available before imputation (e.g., it was known only that the expenditure was for a good). When so little information is available, the risks of bias in the estimates of the expenditure categories are more significant. Additional results regarding the imputation of expenditure codes that are more detailed can be found in Appendix VII, which contains a breakdown of the imputed expenditure codes by the initial level of the information from the respondent.

Restaurant expenditures are reported using a slightly different format in the second section of the diary. Imputation is used primarily to assign a value when the total amount of the restaurant expenditure or the cost of alcoholic beverages is missing, or when the type of meal (breakfast, lunch, dinner or snack and beverage) has not been specified. The imputation rate for each of these three types of imputation is shown in Table 5.

Text table 5
Imputation rates by type of imputation for the section of the diary on Snacks, beverages and meals purchased from restaurants or fast-food outlets, Canada, 2013

Type of imputation	Imputation rate
	percentage
Imputation of total cost	1.05
Imputation of costs for alcoholic beverages	3.89
Imputation of meal type (breakfast, lunch, dinner or snack and beverages)	8.38

Lastly, households have the option of providing receipts or recording their expenditure information in the diary. Table 6 shows the percentage of expenditures reported using each method, for food expenditures, restaurant expenditures and other goods and services.

Text table 6
Methods for recording expenses in the diary, Canada, 2013

Expenditure category	Transcriptions	Receipts
	percentage	
Food	24.0	76.0
Restaurant	85.8	14.2
Other goods and services	47.5	52.5

Imputation rates vary depending on the expenditure reporting method. The rates in tables 4 and 5 are shown by the expenditure reporting method in Appendix VIII.

3.4 The effect of large values

For any sample, estimates of totals, averages and standard errors can be affected by the presence or absence of large values in the sample. Large values are more likely to arise from positively skewed populations. Such values are found in the SHS and are taken into account when the final estimates are generated.

4 Definitions

4.1 General concepts

4.1.1 Reference year of the survey

Corresponds to the data collection year, from January 1st to December 31st, 2013.

4.1.2 Household

A person or group of persons occupying one dwelling unit is defined as a "household". The number of households, therefore, equals the number of occupied dwellings.

4.1.3 Household member

A person usually residing in the dwelling unit at the time of the interview.

4.1.4 Reference person

The household member being interviewed chooses which household member should be listed as the reference person after hearing the following definition: "The household reference person is the member of the household mainly responsible for its financial maintenance (e.g., pays the rent, mortgage, property taxes, and electricity). When members of the household share the responsibility equally, choose one of these members to be shown as the reference person". This person must be a member of the household at the time of the interview.

4.1.5 Expenditures

The net cost of all goods and services received for private use within a given period (for example, 1, 3 or 12 months), whether or not the goods or services were paid for during that period, and regardless of whether these expenditures were made in Canada or abroad. Business expenditures are excluded.

4.1.6 Taxes included

All expenditures include the Goods and Services Tax, provincial retail sales taxes, tips, customs, duties and any other additional charges or taxes.

4.1.7 Gifts

Any expenditure may include gifts given to persons outside the household. Only the value of gifts of clothing is reported separately.

4.1.8 Insurance settlements

Where an insurance settlement was used to repair or replace property, the survey includes only the deductible amount paid for an item.

4.1.9 Trade-ins

Where a trade-in is used to lower the price of an item, most commonly a vehicle, the expenditure amount is the total cost after the trade-in. Real estate transactions are excepted.

4.2 Household characteristics

4.2.1 Number of households in sample

Corresponds to the number of eligible sample households minus households that interviewers were unable to contact, households that refused to participate and households whose interview questionnaire were rejected for lacking too much information.

4.2.2 Estimated number of households

Estimation of the average number of households during the reference year.

4.2.3 Household size

Number of persons in the household at the time of the interview.

4.2.4 Age of reference person

Corresponds to the age of the reference person at the time of the interview.

4.2.5 Household income before tax

Corresponds to the total income before tax received by the household the year prior to the reference year of the survey. It refers to income from all sources including government transfers: scholarships, bursaries and fellowships, wages and salaries before deductions, farm self-employment net income, non-farm self-employment net income, universal child care tax benefit, Old Age Security pension, CPP and QPP benefits, Employment Insurance benefits, social assistance, workers' compensation benefits, Federal GST/HST Credit, provincial tax credits, other government transfers, private retirement pensions, support payments received, other taxable income and income from a RDSP and investment income.

4.2.6 Homeowner

Household living in a dwelling owned (with or without a mortgage) by a member of the household at the time of the interview.

4.3 Selected household expenditures

4.3.1 Total expenditure

The sum of total current consumption, income taxes, personal insurance payments and pension contributions, and gifts of money, alimony and contributions to charity.

4.3.2 Total current consumption

Sum of the expenditures for food, shelter, household operations, household furnishings and equipment, clothing and accessories, transportation, health care, personal care, recreation, education, reading materials and other printed matter, tobacco products and alcoholic beverages, games of chance, and miscellaneous expenditures.

4.3.3 Food purchased from stores

"Stores" includes all establishments where food can be bought, such as grocery stores, specialty food stores, department stores, warehouse-type stores and convenience stores, but also frozen food suppliers, outdoor farmers' markets and stands, and all other non service establishments. The expenditures are net of cash premium vouchers or rebates at the cash register and include deposits paid for at the time of purchase. These deposits are excluded from the expenditures when reimbursed and are shown as negative expenditures (flow of money in) in the "Miscellaneous expenditures" section.

4.3.4 Food purchased from restaurants

"Restaurants" includes full service restaurants, fast-food outlets, cafeterias, but also refreshments stands, snack bars, vending machines, mobile canteens, caterers and chip wagons. Includes tips. Does not include expenditures for alcoholic beverages.

4.3.5 Shelter

Principal accommodation (either owned or rented) and other accommodation such as vacation homes or accommodation while travelling.

4.3.6 Rent

Net rent, excluding rent paid for business, or rooms rented out. Includes additional amounts paid to landlord.

4.3.7 Tenants'/Homeowners' insurance premiums

Premiums paid for fire and comprehensive policies.

4.3.8 Repairs and maintenance (owned living quarters)

Covers expenditures for labor and materials for all types of repairs and maintenance, including expenditures to repair and maintain built-in equipment, appliances and fixtures. Expenditures related to alterations and improvements are excluded as they are considered as an increase in assets (investment) rather than an expense.

4.3.9 Water, fuel and electricity (for principal accommodation)

Expenditures for services related to water and sewage, electricity, and natural gas and other fuel for the principal accommodation, whether rented or owned.

4.3.10 Property taxes and sewage charges (for owned vacation homes and other secondary residences)

Refers to the amount billed, excluding any rebates. Special service charges (e.g., garbage, sewage), local improvements, and water charges are included if these are part of the property tax bill.

4.3.11 Accommodation away from home

Includes all expenses for accommodation while travelling. Excludes expenditures for accommodation that were part of a package trip.

4.3.12 Household appliances

Refers to the net purchase price after deducting trade-in allowance and any discount. Excludes appliances included in the purchase of a home.

4.3.13 Purchase of automobiles, vans and trucks

Refers to the net purchase price, including extra equipment, accessories, and warranties bought when the vehicle was purchased, after deducting any trade-in allowance or separate sales. Separate sales occur when a vehicle is sold independently by the owner, e.g., not traded in when purchasing or leasing another vehicle.

4.3.14 Health care

Includes direct costs to household (out-of-pocket) net of the expenditures reimbursed, and health insurance premiums.

4.3.15 Package trips

Includes at least two components such as transportation and accommodation, or accommodation with food and beverages.

4.3.16 Tobacco products and smokers' supplies

Includes cigarettes, tobacco, cigars, matches, pipes, lighters, ashtrays, cigarette papers and tubes, and other smokers' supplies.

4.3.17 Alcoholic beverages

Includes alcoholic beverages purchased from stores and restaurants. Expenditures on supplies and fees for self-made beer, wine or liquor are also included.

4.3.18 Games of chance

Expenditures on all types of games of chance. The expenditures are not net of the winnings from these games.

4.3.19 Discounts and refunds

Presented in the data tables as "negative expenditures" since they represent a flow of money into the household instead of out of it.

4.3.20 Income taxes

The sum of federal and provincial income taxes payable for the taxation year prior to the reference year of the survey. Income taxes include taxes on income, capital gains and RRSP withdrawals, after taking into account exemptions, deductions, non-refundable tax credits, and the refundable Quebec abatement.

4.4 Dwelling characteristics

4.4.1 Type of dwelling

Type of dwelling in which the household resided at the time of interview. A dwelling is a structurally separate set of living premises with a private entrance from outside the building or from a common hall or stairway.

- A **single detached** dwelling contains only one dwelling unit and is completely separated by open space on all sides from any other structure, except its own garage or shed.
- A **single attached** dwelling is a double or semi-detached unit (side-by-side) or a row or terrace unit.
- **Apartment** includes duplexes (two dwellings, situated one above the other), triplexes, quadruplexes and apartment buildings.
- **Other** dwellings include mobile homes, motor homes, tents, railroad cars or houseboats, which are used as permanent residences and are capable of being moved on short notice.

4.4.2 Repairs needed

Indicates the respondent's perception of the repairs the dwelling needed at the time of the interview to restore it to its original condition. Remodelling, additions, conversions, or energy improvements that would upgrade the dwelling over and above its original condition are not included.

- **Major repairs** include serious deficiencies in the structural condition of the dwelling, as well as the plumbing, electrical and heating systems. Examples include corroded pipes, damaged electrical wiring, sagging floors, bulging walls, damp walls and ceilings, and crumbling foundation.
- **Minor repairs** include deficiencies in the surface or covering materials of the dwelling and less serious deficiencies in the plumbing, electrical and heating systems. Examples include small cracks in interior walls and ceilings, broken light fixtures and switches, cracked or broken panes, leaking sinks, missing shingles or siding, and peeling paint.

4.4.3 Tenure

Housing status of the household at the time of the interview.

- **Owned with mortgage** indicates that the dwelling was owned by a household member and that there was a mortgage at the time of the interview.
- **Owned without mortgage** indicates that the dwelling was owned by a household member and that there was no mortgage at the time of the interview.
- **Rented** indicates that the dwelling was rented by the household or occupied rent-free at the time of the interview.

4.4.4 Number of bathrooms (for dwelling occupied at the time of the interview)

Number of rooms in the dwelling with an installed bathtub and/or shower.

4.5 Household equipment

4.5.1 Telephone (includes business use)

Includes telephones used for business if the business is conducted in the dwelling. Cordless phones are also included.

4.5.2 Cellular telephone

Includes cellular telephones and handheld text messaging devices with cell phone capability.

4.5.3 Compact disc player

A compact disc player may be a separate unit, part of a component or built in (as in a receiver/cassette recorder/compact disc combination unit).

4.5.4 Home computer

Excludes computers used exclusively for business purposes.

4.5.5 Internet use from home

Indicates whether the household has access to the Internet at home.

4.5.6 Owned vehicles

Number of vehicles (automobiles, vans and trucks) owned by members of the household at the end of the month prior to the time of the interview.

4.6 Classification categories

4.6.1 Canada

Canada-level data for 2013 include the 10 provinces only.

4.6.2 Province/territory

No data for the territories for 2013.

4.6.3 Before-tax household income quintile (national)

Income groupings are obtained by ranking the households responding to the interview in ascending order by the total income before tax of the households, then partitioning the households into five groups of similar size. The estimated number of households in each group should be the same in principle but differences may occur due to the weight of the household at the boundary of two quintiles, since this household must lie in either one or the other of these quintiles. Moreover, the specific methodology of the survey (with a series of weights for the interview and another series for the diary) ensures that the same estimate of the number of households for the interview and the diary will occur only if the quintiles are defined at the provincial level. For the national quintiles, there may be a difference between the estimate of the number of households based on either the interview weights or the diary weights. (See section 5 "Derivation of data tables".)

4.6.4 Housing tenure

Whether a household member owned or rented the dwelling in which the household lived at the time of the interview.

- **Owners** refers to all households living in a dwelling owned (with or without mortgage) by a household member at the time of the interview.
- **Owners with mortgage** owned the dwelling with a mortgage at the time of the interview.
- **Owners without mortgage** owned the dwelling without a mortgage at the time of the interview.
- **Renters** rented a dwelling at the time of the interview (as a regular tenant, rent free, or with reduced rent)

4.6.5 Household type

Households are divided according to the following types:

- **One person households** are the households where the dwelling is occupied by only one person at the time of the interview.
- **Couple households** are households where the married or common law spouse of the reference person is a member of the household at the time of the interview. This household type may be further broken down into couple households without children (without additional persons), with children (without additional persons), and with additional persons. "Children" are never-married sons, daughters, or foster children of the reference person and may be any age. "Additional persons" include sons, daughters and foster children whose marital status is other than "single, never-married", other relatives by birth or marriage, and unrelated persons.
- **Lone-parent households** are households where the reference person has no spouse at the time of the interview and there is at least one child (never-married son, daughter, or foster child of the reference person). The lone-parent households for which data are presented do not include any additional persons.
- **Other households** are households composed of relatives only or households having at least one household member who is unrelated to the reference person (e.g., lodger, roommate, employee). Relatives may include:

• son, daughter, or foster child of the reference person whose marital status is other than single, never-married;

• relatives of the reference person by birth or marriage (not spouse, son, daughter or foster child).

4.6.6 Size of area of residence

Sampled dwellings are assigned to the following groups depending on the area in which they are located according to the 2006 Census boundaries and population size.

Population centres

1,000,000 and over
500,000 to 999,999
250,000 to 499,999
100,000 to 249,999
30,000 to 99,999
1,000 to 29,999

Rural

4.6.7 Population centre

Area with a population of at least 1,000 or more and a density of 400 or more people per square kilometre. Population centres are classified as either small, medium, or large as defined below:

- Small population centre: 1,000 to 29,999
- Medium population centre: 30,000 to 99,999
- Large urban population centre: 100,000 and over

4.6.8 Rural area

All areas outside population centres are considered rural. Taken together, population centres and rural areas cover all of Canada.

4.6.9 Age of reference person

Households are grouped according to the age of the reference person as the following:

– Less than 30 years

– 30 to 39 years

– 40 to 54 years

– 55 to 64 years

– 65 years and over

5 Derivation of data tables

This section explains how the SHS data tables have been derived. It then explains the calculations used most frequently to manipulate the data. Users are advised to refer to this section before doing their data analysis.

As stated above, only a subsample of the households have to fill out a diary. Therefore, different weights are calculated for the interview questionnaire and the diary, which makes using the data more complicated.

5.1 Estimates of number of households

Estimates are generated using two sets of weights, one for the interview and the other for the diary. Adjustments made during weighting ensure that the estimate of the number of households at the provincial level using either set of weights is equivalent for the following domains:

- household sizes of one, two, or three or more persons; and
- household income groups defined according to provincial quintiles.

By default, the estimate of the number of households for any aggregation of these domains also results in equivalent estimates.

For any other domain, an estimate of the number of households may differ somewhat depending on the reliability of these estimates. The estimate of the number of households in the SHS tables has been produced using interview weights, as opposed to diary weights. The average household size is also produced from the interview weights.

The estimated number of households and the average household size of the various domains for which estimates are produced in CANSIM tables are available in Appendix IX.

5.2 Estimates of average expenditure per household

Estimates using both interview and diary expenditure data are produced in two steps: estimates are produced separately from the interview and the diary, and then they are added together.

For average expenditure per household, the interview average expenditure per household is calculated using the weighted sum of expenditure data obtained from the interview divided by the sum of the interview weights. Similarly, the diary average expenditure per household is estimated using the weighted sum of expenditure data obtained from the diary divided by the sum of the diary weights. The two components are then added to obtain the average expenditure per household. With this approach, the combined interview and diary average expenditure per household does not exactly match the combined interview and diary weighted sum of expenditure divided by the estimated number of households (produced using the interview weights) for domains in which the interview and diary estimates do not match. Nevertheless, the approach ensures that the sum of the average expenditure per household for all categories equals the total average expenditure per household.

5.3 Examples of expenditure estimates

The tables in this section contain examples of expenditure estimates produced separately from interview and from diary data, as well as an example of expenditure estimates where interview and diary data have to be combined.

5.3.1 Examples of expenditure estimates obtained from interview data

The CANSIM tables include estimates of average expenditure per household. For technical reasons, the estimated number of households and the average household size are not included in these tables but are provided in Appendix IX. In this document, we present an example of the estimated number of households in Table 7 associated with estimates of average expenditure per household from Table 8 in order to help in the understanding of the subsequent examples.

Text table 7
Estimated number of households based on interview weights, by household tenure

	All households	Owner with mortgage	Owner without mortgage	Renter
	number			
Estimated number of households	13,514,009	4,812,813	4,219,949	4,481,247

Text table 8
Average household expenditures obtained from interview data, by household tenure

	All households	Owner with mortgage	Owner without mortgage	Renter
	dollars			
Shelter	15,210	23,712	9,643	11,320
Household furnishing and equipment	2,027	2,699	2,235	1,115
Clothing and accessories	3,360	4,289	3,268	2,448
Transportation	11,229	14,505	12,389	6,638

5.3.2 Examples of expenditure estimates obtained from diary data

Text table 9
Estimated number of households based on diary weights, by household tenure

	All households	Owner with mortgage	Owner without mortgage	Renter
	number			
Estimated number of households	13,514,009	4,785,857	4,214,778	4,513,374

Text table 10
Average household expenditures obtained from diary data, by household tenure

	All households	Owner with mortgage	Owner without mortgage	Renter
	dollars			
Food expenditures	7,795	9,234	8,465	5,642
Food purchased from stores	5,588	6,583	6,053	4,098
Food purchased from restaurant	2,207	2,652	2,412	1,544

5.3.3 Examples of estimates obtained from both interview and diary expenditure data

In Table 11, we present the estimated number of households and the average household size as provided in Appendix IX, while Table 12 represents a typical example of an average household expenditures table available to users.

Text table 11
Estimated number of households and average household size based on interview weights, by household tenure

	All households	Owner with mortgage	Owner without mortgage	Renter
		number		
Estimated number of households	13,514,009	4,812,813	4,219,949	4,481,247
Average household size	2.48	3.03	2.30	2.05

Text table 12
Average household expenditures obtained from interview and diary data, by household tenure

	All households	Owner with mortgage	Owner without mortgage	Renter
		dollars		
Total expenditure [1]	39,621	54,439	36,000	27,163
Food expenditures	7,795	9,234	8,465	5,642
Food purchased from stores	5,588	6,583	6,053	4,098
Food purchased from restaurant	2,207	2,652	2,412	1,544
Shelter	15,210	23,712	9,643	11,320
Household furnishing and equipment	2,027	2,699	2,235	1,115
Clothing and accessories	3,360	4,289	3,268	2,448
Transportation	11,229	14,505	12,389	6,638

1. Total of expenditure for the categories used in this example.

Tables 7 to 10 above are not available to users; however, the following section provides examples on how to produce other estimates using tables such as 11 and 12 above.

5.4 Calculating various estimates using the tables

The following section explains the calculation method for some of the common SHS expenditure data manipulations.

5.4.1 How to calculate average expenditures per person

To calculate average expenditure per person for a given category, divide the average expenditure per household for that category (Table 12) by the average household size (found on the second line of Table 11).

For example, the average food expenditure per person for renter households is calculated as follows:

Figure 2

Average food expenditure per person for renter households

Average food expenditure per person for renter households =

$$\frac{\text{Average food expenditure per renter household}}{\text{Average size of renter households}}$$

$$\text{Example : } \frac{\$5,642}{2.05} = \$2,752$$

When comparing estimates of average expenditure per person, note that household composition (number of children and adults) is a significant factor in many expenditure patterns.

5.4.2 How to calculate percentages of total average household expenditure (budget shares)

To calculate the budget share of an individual expenditure category as a percentage of total average household expenditure, divide the average expenditure per household for that expenditure category by the total average expenditure per household, and then multiply by 100.

For example, using the Table 12, the percentage of total average expenditure per household represented by the average expenditures on food per household, for renter households, is calculated as follows:

Figure 3

Percentage of total average expenditure per household

Percentage of total average expenditure per household represented by the average expenditures on food per household, for renter households =

$$\frac{\text{Average expenditure on food per renter household}}{\text{Total average expenditure per renter household}} \times 100$$

$$\text{Example : } \frac{\$5{,}642 \times 100}{\$27{,}163} = 20.77\%$$

5.4.3 Combining expenditure categories into your own groupings

The average expenditure per household for different expenditure categories can be added together to make new subtotals.

For example, the average expenditure on shelter and transportation per renter household is calculated as follows:

Average expenditure on shelter per renter household + Average expenditure on transportation per renter household

Example: $11,320 + $6,638 = $17,958

5.4.4 Calculating aggregate expenditures

To calculate aggregate expenditures, multiply the average expenditure per household from one column for an expenditure category (Table 12) by the estimated number of households from the same column in Table 11.

For example, the aggregate expenditure on food for renter households is calculated as follows:

Average expenditure on food per renter household x Estimated number of renter households

Example: $5,642 x 4,481,247 = $25,283,195,574

Note: Since the estimated variable comes from diary data and the estimated number of households in the domains used differs slightly depending on whether it is calculated using interview weights or diary weights, the estimate only approximates the estimate that would have been obtained using the weighted sum of expenditures. Indeed, if we use the estimated number of households based on the diary weights from Table 9, we could derive the weighted sum of expenditures. We then get:

Average expenditure on food per renter household x Estimated number of renter households

Example: $5,642 x 4,513,374 = $25,464,456,108

The estimates of aggregate expenditure are exact for all domains for which the sum of interview and diary weights are the same (see section 5.1) as well as for all variables coming from the interview questionnaire. All other estimates for which we have to derive aggregate expenditure are approximated by default if the aggregate expenditure is approximated.

5.4.5 Calculating aggregate expenditures by combining data columns

To calculate aggregate expenditures for multiple columns, calculate the aggregate expenditure for each of the columns for an expenditure category and add them after.

For example, aggregate expenditure on food by owner households (with or without a mortgage) is calculated as follows:

(Average expenditure on food per owner household with a mortgage x Estimated number of owner households with mortgage) + (Average expenditure on food per mortgage-free owner household x Estimated number of mortgage-free owner households)

Example: ($9,234 x 4,812,813) + ($8,465 x 4,219,949) = $80,163,383,527

5.4.6 How to calculate average expenditures per household by combining data columns

To calculate the average expenditure for multiple columns, calculate the aggregate expenditure for each of the columns for an expenditure category from the average expenditure (Table 12), add them, and then divide the total by the sum of the estimated number of households in those columns in Table 11.

For example, the average expenditure on food per owner household (with or without a mortgage) is calculated as follows:

Figure 4

Average expenditure on food per owner household

Average expenditure on food per owner household (with or without a mortgage) =

$$\frac{\begin{array}{c}\text{(Average expenditure on food per owner household with a mortgage x Estimated number of owner households with mortgage) +} \\ \text{(Average expenditure on food per mortgage-free owner household x Estimated number of mortgage-free owner households)}\end{array}}{\begin{array}{c}\text{Estimated number of owner households with a mortgage +} \\ \text{Estimated number of mortgage-free owner households}\end{array}}$$

$$\text{Example : } \frac{(\$9{,}234 \times 4{,}812{,}813) + (\$8{,}465 \times 4{,}219{,}949)}{4{,}812{,}813 + 4{,}219{,}949} = \$8{,}875$$

5.4.7 Calculating the expenditure share of a subgroup among all households

An expenditure share is the percentage of the aggregate expenditure for an expenditure category that can be attributed to a particular subgroup of households, e.g., the percentage of all food expenditures made by renter households.

It is calculated by deriving the household subgroup's aggregate expenditure for an expenditure category and dividing it by the aggregate expenditure for the expenditure category for all households and multiplying by 100.

For example, the percentage of food expenditures made by renter households is calculated as follows:

Figure 5

Percentage of food expenditures made by renter households

Percentage of food expenditures made by renter households =

$$\frac{\text{Average expenditure on food per renter household} \times \text{Estimated number of renter households}}{\text{Average expenditure on food per household for all households} \times \text{Estimated total number of households}} \times 100$$

$$\text{Example :} \quad \frac{\$5{,}642 \times 4{,}481{,}247 \times 100}{\$7{,}795 \times 13{,}514{,}009} = 24.00\%$$

6 Related products and services

6.1 CANSIM

CANSIM (the Canadian Socio-Economic Information Management System) is a data base consisting of multi-dimensional cross-sectional tables.

Eight tables presenting annual information from the Survey of Household Spending are available. Table 203-0021 presents household detailed level expenditure data, while tables 203-0022 to 203-0026 present data according to household income quintile, household type, household tenure, size of area of residence and age of reference person respectively. Table 203-0027 presents data on dwelling characteristics and household equipment. Finally, table 203-0028 provides detailed food expenditure data.

6.2 Household Expenditures Research Paper Series

This series provides detailed documentation on issues, concepts, methodology, data quality and other relevant research related to household expenditures from the Survey of Household Spending.

62F0026MIE Household Expenditures Research Paper Series

6.3 Custom tabulations

For clients with more specialized data needs, custom tabulations can be produced on a cost-recovery basis. Custom tabulations can be produced to your specifications on a contract basis (subject to confidentiality restrictions). Aggregate data at the detailed expenditure level are also available on a custom basis.

7 References

[1] Charlebois, J. and Dubreuil, G. 2011. Variance Estimation for the Redesigned Survey of Household Spending. Proceedings of the Survey Methods Section, Statistical Society of Canada Annual Meeting, June 2011.

Appendix I — Diary response rates among the respondents to the interview

Text table 1

Diary response rates among the respondents to the interview, Canada and provinces, 2013

	Interview respondents [1]	Diaries [2]			
		Refusal	Unusable	Usable	Response rate [3]
	number				percentage
Canada	5,878	1,690	140	4,048	68.9
Atlantic provinces	1,833	467	51	1,315	71.7
Newfoundland and Labrador	468	121	10	337	72.0
Prince Edward Island	272	73	10	189	69.5
Nova Scotia	562	154	18	390	69.4
New Brunswick	531	119	13	399	75.1
Quebec	829	218	18	593	71.5
Ontario	830	284	15	531	64.0
Prairie provinces	1,687	495	36	1,156	68.5
Manitoba	578	155	10	413	71.5
Saskatchewan	486	141	13	332	68.3
Alberta	623	199	13	411	66.0
British Columbia	699	226	20	453	64.8

1. Interview respondents from households selected to fill out the diary.
2. The definition of usable and unusable diaries is given in the "Data processing and quality control" Section.
3. (Usable diaries/Interview respondents selected for the diary) x 100.

Appendix II — Response rates by collection month

Text table 1
Interview response rates by collection month, Canada, 2013

	Eligible sampled households	No contacts	Refusals	Residual non-respondents	Respondents	Response rate [1]
	number					percentage
All months	17,389	1,158	3,911	634	11,686	67.2
January	1,460	93	304	54	1,009	69.1
February	1,508	124	337	44	1,003	66.5
March	1,469	103	322	62	982	66.8
April	1,418	81	330	51	956	67.4
May	1,435	77	341	55	962	67.0
June	1,446	78	322	55	991	68.5
July	1,412	118	302	52	940	66.6
August	1,423	104	320	53	946	66.5
September	1,516	93	335	56	1,032	68.1
October	1,416	67	320	48	981	69.3
November	1,434	99	326	57	952	66.4
December	1,452	121	352	47	932	64.2

1. (Respondent households/Eligible sampled households) x 100.

Text table 2
Diary response rates by collection month, Canada, 2013

	Eligible sampled households [1]	Interview non-respondents [2]	Diaries [3]			Response rate [4]
			Refusal	Unusable	Usable	
	number					percentage
All months	8,782	2,904	1,690	140	4,048	46.1
January	741	230	130	17	364	49.1
February	755	253	128	8	366	48.5
March	745	260	124	9	352	47.2
April	722	233	133	15	341	47.2
May	727	253	144	10	320	44.0
June	728	217	144	18	349	47.9
July	717	229	163	11	314	43.8
August	716	230	127	10	349	48.7
September	763	248	141	21	353	46.3
October	720	220	145	11	344	47.8
November	716	262	149	4	301	42.0
December	732	269	162	6	295	40.3

1. The eligible sampled households are those selected to fill out the diary.
2. Includes interview "No contacts", "Refusals" and "Residual non-respondents" from households selected to fill out the diary.
3. The definition of usable and unusable diaries is given in the "Data processing and quality control" Section.
4. (Usable diaries/Eligible sampled households) x 100.

Appendix III — Response rates by size of area of residence and by dwelling type

Text table 1

Interview response rates by size of area of residence, Canada, 2013

	Eligible sampled households	No contacts	Refusals	Residual non-respondents	Respondents	Response rate [1]
	number					percentage
All population centres and rural area	17,389	1,158	3,911	634	11,686	67.2
Population centre 1,000,000 and over	4,797	333	1,049	151	3,264	68.0
Population centre 500,000 to 999,999	1,534	123	356	56	999	65.1
Population centre 250,000 to 499,999	1,377	75	373	77	852	61.9
Population centre 100,000 to 249,999	2,875	225	726	109	1,815	63.1
Population centre 30,000 to 99,999	1,968	110	453	84	1,321	67.1
Population centre 1,000 to 29,999	2,085	128	428	65	1,464	70.2
Rural area	2,753	164	526	92	1,971	71.6

1. (Respondent households/Eligible sampled households) x 100.

Text table 2

Diary response rates by size of area of residence, Canada, 2013

	Eligible sampled households [1]	Interview non-respondents [2]	Diaries [3]			Response rate [4]
			Refusal	Unusable	Usable	
	number					percentage
All population centres and rural area	8,782	2,904	1,690	140	4,048	46.1
Population centre 1,000,000 and over	2,443	794	538	33	1,078	44.1
Population centre 500,000 to 999,999	762	271	126	7	358	47.0
Population centre 250,000 to 499,999	705	278	132	9	286	40.6
Population centre 100,000 to 249,999	1,495	547	264	21	663	44.3
Population centre 30,000 to 99,999	991	320	190	23	458	46.2
Population centre 1,000 to 29,999	1,042	317	181	25	519	49.8
Rural area	1,344	377	259	22	686	51.0

1. The eligible sampled households are those selected to fill out the diary.
2. Includes interview "No contacts", "Refusals" and "Residual non-respondents" from households selected to fill out the diary.
3. The definition of usable and unusable diaries is given in the "Data processing and quality control" Section.
4. (Usable diaries/Eligible sampled households) x 100.

Text table 3
Interview response rates by dwelling type, Canada, 2013

	Eligible sampled households	No contacts	Refusals	Residual non-respondents	Respondents	Response rate [1]
	number					percentage
All dwelling types	17,389	1,158	3,911	634	11,686	67.2
Single detached	11,133	651	2,643	377	7,462	67.0
Double or row/terrace	1,601	104	343	64	1,090	68.1
Duplex, low-rise or high-rise apartment	4,244	361	824	178	2,881	67.9
Other	376	33	77	13	253	67.3
Not available	35	9	24	2	0	0.0

1. (Respondent households/Eligible sampled households) x 100.

Text table 4
Diary response rates by dwelling type, Canada, 2013

	Eligible sampled households [1]	Interview non-respondents [2]	Diaries [3]			Response rate [4]
			Refusal	Unusable	Usable	
	number					percentage
All dwelling types	8,782	2,904	1,690	140	4,048	46.1
Single detached	5,590	1,877	1,026	74	2,613	46.7
Double or row/terrace	804	253	149	14	388	48.3
Duplex, low-rise or high-rise apartment	2,165	688	477	46	954	44.1
Other	204	67	38	6	93	45.6
Not available	19	19	0	0	0	0.0

1. The eligible sampled households are those selected to fill out the diary.
2. Includes interview "No contacts", "Refusals" and "Residual non-respondents" from households selected to fill out the diary.
3. The definition of usable and unusable diaries is given in the "Data processing and quality control" Section.
4. (Usable diaries/Eligible sampled households) x 100.

Appendix IV — Diary response rates among the respondents to the interview, by various household characteristics

Text table 1

Diary response rates among the respondents to the interview, by household type, Canada, 2013

	Interview respondents [1]	Diaries [2]			
		Refusal	Unusable	Usable	Response rate [3]
	number				percentage
All household types	5,878	1,690	140	4,048	68.9
One person household	1,596	501	42	1,053	66.0
Couple without children	1,783	423	32	1,328	74.5
Couple with children	1,495	425	27	1,043	69.8
Couple with other related or unrelated persons	233	72	4	157	67.4
Lone-parent household with no additional persons	428	147	18	263	61.4
Other household with related or unrelated persons	343	122	17	204	59.5

1. Interview respondents from households selected to fill out the diary.
2. The definition of usable and unusable diaries is given in the "Data processing and quality control" Section.
3. (Usable diaries/Interview respondents selected for the diary) x 100.

Text table 2

Diary response rates among the respondents to the interview, by household tenure, Canada, 2013

	Interview respondents [1]	Diaries [2]			
		Refusal	Unusable	Usable	Response rate [3]
	number				percentage
All household tenures	5,878	1,690	140	4,048	68.9
Owner without mortgage	2,116	530	31	1,555	73.5
Owner with mortgage	2,015	572	40	1,403	69.6
Renter (with or without rent paid)	1,747	588	69	1,090	62.4

1. Interview respondents from households selected to fill out the diary.
2. The definition of usable and unusable diaries is given in the "Data processing and quality control" Section.
3. (Usable diaries/Interview respondents selected for the diary) x 100.

Text table 3

Diary response rates among the respondents to the interview, by age of the reference person, Canada, 2013

	Interview respondents [1]	Diaries [2]			
		Refusal	Unusable	Usable	Response rate [3]
	number				percentage
Reference person of all ages	5,878	1,690	140	4,048	68.9
Less than 30 years	558	187	20	351	62.9
30 to 39 years	878	269	31	578	65.8
40 to 54 years	1,717	554	35	1,128	65.7
55 to 64 years	1,181	278	23	880	74.5
65 years and over	1,544	402	31	1,111	72.0

1. Interview respondents from households selected to fill out the diary.
2. The definition of usable and unusable diaries is given in the "Data processing and quality control" Section.
3. (Usable diaries/Interview respondents selected for the diary) x 100.

Text table 4

Diary response rates among the respondents to the interview, by before-tax income quintile, Canada, 2013

	Interview respondents [1]	Diaries [2]			
		Refusal	Unusable	Usable	Response rate [3]
	number				percentage
Total of all income quintiles	5,878	1,690	140	4,048	68.9
Lowest quintile	1,227	401	41	785	64.0
Second quintile	1,169	333	35	801	68.5
Third quintile	1,195	318	28	849	71.0
Fourth quintile	1,173	310	21	842	71.8
Highest quintile	1,114	328	15	771	69.2

1. Interview respondents from households selected to fill out the diary.
2. The definition of usable and unusable diaries is given in the "Data processing and quality control" Section.
3. (Usable diaries/Interview respondents selected for the diary) x 100.

Appendix V — Impact of expenditure imputation on communication services, cablevision, satellite distribution and security services

Text table 1
Impact of expenditure imputation on communication services, cablevision, satellite distribution and security services, Canada, 2013

	Impact of imputation [1]
	percentage
Landline telephone services	46.4
Cell phone, pager and handheld text messaging services	11.6
Rental of cablevision services	58.5
Rental of satellite TV or radio services	23.8
Internet access services	55.0
Home security services	8.3

1. The impact of imputation represents the proportion of the total value of the estimate that is obtained from imputed data.

Appendix VI — Imputation of dwelling characteristics and household equipment

Text table 1

Percentage of households requiring imputation of dwelling characteristics or household equipment, Canada and provinces, 2013

	Number of variables imputed (out of 25)			
	1	2	3 or more	Total
	percentage			
Canada	6.4	1.4	1.0	8.8
Newfoundland and Labrador	7.4	1.6	0.6	9.7
Prince Edward Island	7.4	2.4	2.7	12.5
Nova Scotia	6.6	1.3	0.9	8.7
New Brunswick	5.8	2.3	1.1	9.2
Quebec	7.4	0.8	0.7	8.9
Ontario	6.2	1.2	0.6	7.9
Manitoba	6.3	1.9	1.0	9.2
Saskatchewan	7.0	2.0	1.2	10.2
Alberta	3.8	0.6	0.6	5.0
British Columbia	6.6	1.5	1.9	9.9

Appendix VII — Breakdown of the imputed expenditure codes by the initial level of the information from the respondent

Text table 1

Distribution of imputation of detailed expenditure codes by the initial level of information collected from the section of the diary on Goods and services including food from stores, Canada, 2013

Initial collected information (initial expenditure category)	percentage
Specific food group	43.65
Food unspecified	10.52
Grocery item unspecified	10.53
Non-food grocery item unspecified	2.40
Walmart item unspecified	3.72
Costco item unspecified	0.58
Communication equipment and services unspecified	0.33
Child care unspecified	0.01
Pet expenses - unspecified	0.35
Garden supplies unspecified	0.33
Household supplies unspecified	0.45
Furnishings and decor unspecified	0.38
Housewares - unspecified	0.68
Home and garden services - unspecified	0.01
Home and garden tools and equipment unspecified	0.26
Household equipment, parts and accessories unspecified	0.98
Apparel unspecified	1.20
General repairs for automobiles, mini-vans and trucks unspecified	1.00
Parts and supplies for automobiles, mini-vans and trucks unspecified	0.28
Transportation unspecified	0.12
Health care supplies and equipment unspecified	0.10
Medicine unspecified	1.27
Eye care goods and services unspecified	0.05
Medical services unspecified	0.12
Personal care supplies and equipment unspecified	2.18
Massage Unspecified	0.08
Personal care services unspecified	0.12
Video game systems and parts unspecified	0.12
Camera and accessories unspecified	0.02
Operation of recreational vehicle - unspecified	0.01
Digital download unpsecified	0.29
Electronics unspecified	0.21
Entertainment unspecified	0.51
Movies unspecified	0.57
Recreational goods and services unspecified	0.08
Magazines unspecified	0.01
Newspapers unspecified	0.01
Printed matter unspecified	0.18
Tuition fees unspecified	0.02
Tobacco products unspecified	0.09
Alcoholic Beverages purchased from store unspecified	0.62
Games of chance unspecified	0.11
Services unspecified	0.20
Goods unspecified	7.91
Gift unspecified	2.22
Baby goods unspecified	0.30
Repairs, renovations and maintenance of home unspecified	0.91
Utilities unspecified	0.07
Taxes unspecified	0.04
Gifts of money unspecified	1.52
Gifts of money and other support payments to persons - unspecified	0.10
Donations unspecified	0.65
Insurance unspecified	0.20
Other goods and services unspecified	0.50
Tips unspecified	0.12
Don't know	0.75

Appendix VIII — Imputation rates by method for recording the expenses in the diary

Text table 1

Imputation rates by type of imputation and method for recording the expenses in the section of the diary on Goods and services including food from stores, Canada, 2013

Type of imputation	Transcribed items	Items from a receipt	All items
	percentage		
Imputation of a missing cost for a reported expense			
Food from stores	2.6	0.4	1.2
Other goods and services	3.6	0.5	2.2
All expenditures	3.1	0.4	1.5
Imputation of expenditure items (and their individual cost) from a total expense			
Food from stores	51.3	1.6	19.7
Other goods and services	21.0	1.9	12.0
All expenditures	38.5	1.7	17.1
Imputation of detailed expenditure code			
Food from stores	5.0	6.1	5.7
Other goods and services	4.7	7.0	5.8
All expenditures	4.9	6.3	5.7

Text table 2

Imputation rates by type of imputation and method for recording the expenses in the section of the diary on Snacks, beverages and meals purchased from restaurants or fast-food outlets, Canada, 2013

Type of imputation	Transcribed items	Items from a receipt	All items
	percentage		
Imputation of total cost	1.06	1.00	1.05
Imputation of costs for alcoholic beverages	3.50	6.25	3.89
Imputation of meal type (breakfast, lunch, dinner or snack and beverages)	8.58	7.18	8.38

Appendix IX — Estimated number of households and average household size by domain

Text table 1

Estimated number of households and average household size by domain defined at the national level, Canada, 2013

Domain	Estimated number of households	Average household size
Canada		
All classes	13,819,964	2.48
Region		
Atlantic Region	981,842	2.34
Quebec	3,449,194	2.30
Ontario	5,158,934	2.60
Prairie Region	2,372,646	2.57
British Columbia	1,857,347	2.43
Province		
Newfoundland and Labrador	215,726	2.34
Prince Edward Island	58,499	2.45
Nova Scotia	394,321	2.32
New Brunswick	313,296	2.33
Quebec	3,449,194	2.30
Ontario	5,158,934	2.60
Manitoba	478,186	2.49
Saskatchewan	420,850	2.42
Alberta	1,473,611	2.64
British Columbia	1,857,347	2.43
Before-tax household income quintile (national)		
Lowest quintile	2,763,242	1.49
Second quintile	2,754,906	2.11
Third quintile	2,772,809	2.49
Fourth quintile	2,762,931	2.95
Highest quintile	2,766,077	3.34
Household type		
One person households	3,847,055	1.00
Couples without children	3,776,079	2.00
Couples with children	3,663,392	3.94
Couples with other related or unrelated persons	659,042	4.92
Lone-parent households with no additional persons	885,851	2.50
Other households with related or unrelated persons	988,545	2.98
Household tenure		
Owner	9,348,723	2.70
Owner with mortgage	5,256,036	3.05
Owner without mortgage	4,092,687	2.25
Renter	4,471,241	2.01
Size of area of residence		
Population centre 1,000,000 and over	6,217,828	2.61
Population centre 500,000 to 999,999	984,894	2.36
Population centre 250,000 to 499,999	1,222,756	2.37
Population centre 100,000 to 249,999	1,300,359	2.47
Population centre 30,000 to 99,999	1,285,777	2.20
Population centre 1,000 to 29,999	1,229,336	2.33
Rural	1,579,015	2.48
Age of reference person		
Less than 30 years	1,516,159	2.30
30 to 39 years	2,289,736	2.98
40 to 54 years	4,358,853	2.93
55 to 64 years	2,553,411	2.28
65 years and over	3,101,804	1.71

* Subtotals may not add up to the total due to rounding.

Text table 2
Estimated number of households and average household size by domain defined at the provincial level, Canada, 2013

Domain	Estimated number of households	Average household size
Newfoundland and Labrador		
All quintiles	215,726	2.34
Lowest quintile	43,053	1.53
Second quintile	43,071	1.95
Third quintile	42,756	2.38
Fourth quintile	43,551	2.70
Highest quintile	43,294	3.11
Prince Edward Island		
All quintiles	58,499	2.45
Lowest quintile	11,696	1.30
Second quintile	11,594	2.20
Third quintile	11,794	2.56
Fourth quintile	11,480	3.05
Highest quintile	11,935	3.15
Nova Scotia		
All quintiles	394,321	2.32
Lowest quintile	78,561	1.41
Second quintile	79,064	2.14
Third quintile	78,774	2.22
Fourth quintile	78,589	2.71
Highest quintile	79,331	3.12
New Brunswick		
All quintiles	313,296	2.33
Lowest quintile	62,630	1.44
Second quintile	62,577	1.98
Third quintile	62,734	2.28
Fourth quintile	62,508	2.83
Highest quintile	62,847	3.12
Quebec		
All quintiles	3,449,194	2.30
Lowest quintile	688,715	1.33
Second quintile	690,874	1.80
Third quintile	689,698	2.39
Fourth quintile	689,908	2.89
Highest quintile	689,998	3.10
Ontario		
All quintiles	5,158,934	2.60
Lowest quintile	1,028,500	1.58
Second quintile	1,031,939	2.30
Third quintile	1,034,765	2.53
Fourth quintile	1,029,475	3.08
Highest quintile	1,034,254	3.50
Manitoba		
All quintiles	478,186	2.49
Lowest quintile	95,529	1.50
Second quintile	95,738	2.15
Third quintile	95,441	2.62
Fourth quintile	95,648	2.87
Highest quintile	95,830	3.31
Saskatchewan		
All quintiles	420,850	2.42
Lowest quintile	84,047	1.51
Second quintile	84,263	2.06
Third quintile	83,534	2.51
Fourth quintile	84,527	2.85
Highest quintile	84,479	3.15
Alberta		
All quintiles	1,473,611	2.64
Lowest quintile	294,607	1.58
Second quintile	294,465	2.35
Third quintile	294,231	2.86
Fourth quintile	295,504	3.03
Highest quintile	294,803	3.36
British Columbia		
All quintiles	1,857,347	2.43
Lowest quintile	368,839	1.46
Second quintile	373,787	2.13
Third quintile	371,329	2.29
Fourth quintile	371,582	2.93
Highest quintile	371,809	3.37

* Subtotals may not add up to the total due to rounding